

**THERMOELECTRIC GENERATION SYSTEM
UTILIZING A PRINTED-CIRCUIT THERMOPILE**

ABSTRACT OF THE DISCLOSURE

A thermoelectric generation system (26) is presented. A plurality of PC thermopiles (24), each consisting of a substrate having a plurality of thermocouples (TC), are coupled together by a backplane (42) to form a thermoarray (TA) capable of producing a desired voltage (E_{TA}) at a desired current (I_{TA}). Each thermocouple (TC) is formed of a first trace (28) formed of a first conductor (20) upon a first surface (32) of the substrate (30) and a second trace (34) formed of a second conductor (22) upon a second surface (36) of the substrate (30). A first junction (J_1) formed between the first and second traces (28,34) is maintained at substantially a first temperature (T_1), and a second junction (J_2) formed between the first and second traces (28,34) is maintained at substantially a second temperature (T_2), so that each thermocouple (TC) generates a voltage (E_{TC}) and a current (I_{TC}). These voltages (E_{TC}) and currents (I_{TC}) are concatenated to achieve the desired voltage (E_{TA}) and current (I_{TA}).